

REMARKS/ARGUMENTS

The Office action mailed on December 12, 2003 has been carefully reviewed and the above identified amendments have been provided to thoroughly address each of the objections and rejections provided by the examiner in that Office action. In addition, the following remarks are submitted to clarify and explain the importance of the above amendments and to support a finding by the examiner that the claims, as amended, are now in a form warranting allowance of this case. Accordingly, the undersigned respectfully requests reconsideration by the examiner in this case.

The examiner had identified a defect in the Declaration previously presented in this case in that a signature date for first inventor Fermin Viteri was omitted. Included herewith is a new Declaration signed by Mr. Viteri and including a date.

Applicant acknowledges that claims 1-7 and 20-23 have been withdrawn from further consideration within this case. Applicant has canceled these claims.

The examiner had rejected claims 8-19 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Particularly, the examiner noted a lack of antecedent basis for the phrase "the fuel" in line 7 of claim 8 and "said fuel" in claims 16, 17 and 18. Applicant has amended claim 8 to replace "the fuel" with "a fuel" to properly indicate that this limitation first appears in claim 8. Claims 16-18, including the phrase "said fuel," now has proper antecedent basis in that claims 16-18 each depend from amended claim 8, either directly or through intervening claims. Accordingly, applicant respectfully submits that this rejection under §112 has now been overcome.

The examiner had rejected claims 8-19 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 5,906,806 to Clark. Applicant has carefully reviewed the examiner's particular basis for citing Clark and studied the patent to Clark including the particular pages cited by the examiner. Applicant has also compared the teachings of Clark with the limitations of claim 8 and respectfully submits that Clark fails to teach

each of the limitations of claim 8, and thus respectfully submits that claim 8 is not anticipated by Clark. Nevertheless, applicant has slightly amended claim 8 to more clearly recite differences between the requirements of claim 8 and the teachings of Clark.

Specifically, claim 8 is directed to a gas mixture for use as an oxidizer mixture in a gas turbine. Limitations of claim 8 specifically identify what separate portions comprise the claimed mixture. Clark teaches a combustion process which does include use of a fuel, oxygen, water and recirculated combustion gas in that process. However, Clark does not teach mixing together these inputs into the Clark combustion process in any way that would provide an oxidizer mixture, as is the case with claim 8.

Rather, Clark teaches inputting fuel, oxygen, water and recirculated combustion gas into a secondary combustion chamber (12). Figure 1 of Clark shows the four separate input streams entering the secondary combustion chamber (12) and a single output. Applicant acknowledges that such an arrangement suggests some form of combination occurring within the secondary combustion chamber (12), merely by the fact that four input streams go into the secondary combustion chamber (12) and only one output leaves the secondary combustion chamber (12). However, this combination occurring within the secondary combustion chamber (12) is never producing a mixture which would be considered to be an oxidizer mixture. Rather, Clark teaches combusting the fuel input with the oxygen input. The water input and recirculated combustion gas input are later used "to moderate and control the combustion gas temperature achieved in the combustion chambers" (column 3, lines 61 and 62).

The water input and the recirculated combustion gas input are taught by Clark to control temperature. Temperature control could conceivably be provided by direct contact mixing. However, it could also be provided in other ways, such as by heat transfer through an intermediate barrier, such as a heat exchange surface. Furthermore, the temperature control is for the combustion gas, and not for the fuel and oxygen before combustion. Hence, the water input and recirculated combustion gas input

would most likely be mixed with the products of combustion of the fuel input and the oxygen input, so that no mixing occurs between the water input and the oxygen input or between the recirculated combustion gas input and the oxygen input. In fact, Clark specifically states that "the present invention utilizes pure oxygen for combustion" (column 3, lines 58 and 59). This suggests that no premixing of recirculated combustion gas or water with the oxygen occurs in the combustion process taught by Clark.

In contrast, claim 8 requires an oxidizer mixture which includes a reactant portion (oxygen is specified in dependent claims) and a diluent portion (steam and/or carbon dioxide are specified in dependent claims). Hence, claim 8 is directed to an oxidizer mixture which includes more than reactants (i.e. oxygen), but also includes a diluent portion. Clark does not teach any such oxidizer mixture combining reactants with diluents. Rather, Clark teaches utilizing pure oxygen for combustion and then utilizing a diluent in the form of both water and recirculated combustion gas to regulate the temperature of the products of combustion after the oxygen has reacted with the fuel.

The Court of Appeals for the Federal Circuit has established that "anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, *arranged as in the claim*." (*Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 221 USPQ 481, 485 (Fed. Cir. 1984) (emphasis added)). In this case, merely having the reactant portion required by claim 8 somewhere within Clark's combustion process and a "diluent portion" as required by claim 8 somewhere in the Clark combustion process is not sufficient. Rather, these limitations of claim 8 must be found in the teachings of Clark and be arranged in a similar fashion to support a finding of anticipation. Clark does teach temperature control through utilization of a diluent, but not by producing the oxidizer mixture required by claim 8. Rather, Clark utilizes these diluent constituents to later moderate temperatures of combustion gases.

This distinction between the teachings of Clark and the limitations of claim 8 are not trivial. Rather, the limitations of claim 8 are directly associated with aspects of the invention of this application which provide significant benefits over the combustion process taught by Clark and otherwise identified in the prior art.

Specifically, figure 1 of this application shows a gas turbine combined cycle schematic which is typical for the prior art. The three major components of the cycle include a compressor to compress the air, a combustor to combust the fuel with the air and a turbine to expand the combustion products and output power. In this prior art gas turbine combined cycle the oxidizer is air. The air must first be compressed before entering the combustor. A significant amount of energy is involved in compressing the air because the air is a gas. The compressor is thus driven directly by the turbine to maximize efficiency of the cycle.

Because this invention as claimed by claim 8 is directed to an oxidizer mixture, rather than some mixture which might occur within the combustion chamber, this oxidizer mixture can be compressed within a compressor in the same fashion that air is compressed. In preferred forms of this invention, in fact, the characteristics of the oxidizer mixture are selected to match in many ways the characteristics of air so that existing air compressors can be utilized for the oxidizer mixture. In contrast, the Clark combustion process keeps the oxidizer and diluent (water and recirculated combustion gas) separate until entering the combustion chamber (12), so that multiple compressors are required if high pressure is to be provided.

Secondarily, because the oxidizer mixture of this invention already includes a diluent portion mixed with the reactant portion, combustion temperatures achieved are regulated in the same fashion that combustion of a fuel with air is automatically regulated by the diluent (nitrogen in the case of air). Specifically, rather than providing pure oxygen with an associated exceptionally high flame temperature, the oxidizer is mixed with the diluent so that high temperatures are not even briefly obtained within

the combustion chamber.

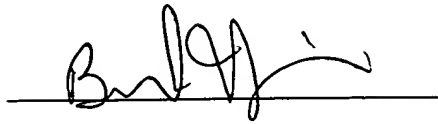
To emphasize the distinction between the requirements of claim 8 and the teachings of Clark, applicant has amended claim 8 within the preamble to specify "a gas mixture for use as an oxidizer mixture in a gas turbine compressor and combustor." This amendment emphasizes that this oxidizer mixture is available for use both within the compressor and the combustor. Applicant acknowledges that the preamble only defines the general art to which claim 8 is directed, and does not act the same as limitations within claim 8. This amendment to the preamble is provided to clarify the differences discussed above.

Also, claim 8 has been amended to specify that the diluent portion is "mixed with said reactant portion." Applicant respectfully submits that the limitations of claim 8, as amended, are patentably distinct from the teachings of Clark. Clark never mixes a reactant portion (i.e. oxygen) with a diluent portion (i.e. water or recirculated combustion gas), but rather only mixes the reactant (oxygen) with the fuel and then later only combines the diluent portion (water or recirculated combustion gas) with the products of combustion of the fuel and the reactant (oxygen). Accordingly, applicant respectfully submits that claim 8 is now in a form warranting allowable status.

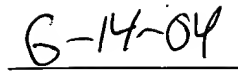
Claims 9-19 depend from amended claim 8, either directly or through intervening claims. Accordingly, claims 9-19 benefit from the amendments made to claim 8 discussed above and the arguments presented above with respect to the patentability of claim 8. Claims 9-19 should thus now also be in a form warranting allowable status.

In view of the foregoing, it is respectfully requested that the examiner pass this case to issue. If, upon consideration, the examiner believes further issues remain outstanding or new ones have been generated, the undersigned requests that the examiner call the undersigned to set up a personal or telephone interview with the undersigned to resolve any such remaining issues.

Respectfully Submitted:

A handwritten signature in black ink, appearing to read 'Bradley P. Heisler', written over a horizontal line.

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A handwritten date '6-14-04' in black ink, written over a horizontal line.

Date